

Increasing starch digestibility of sorghum silage and HMS

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ANIMAL SCIENCE
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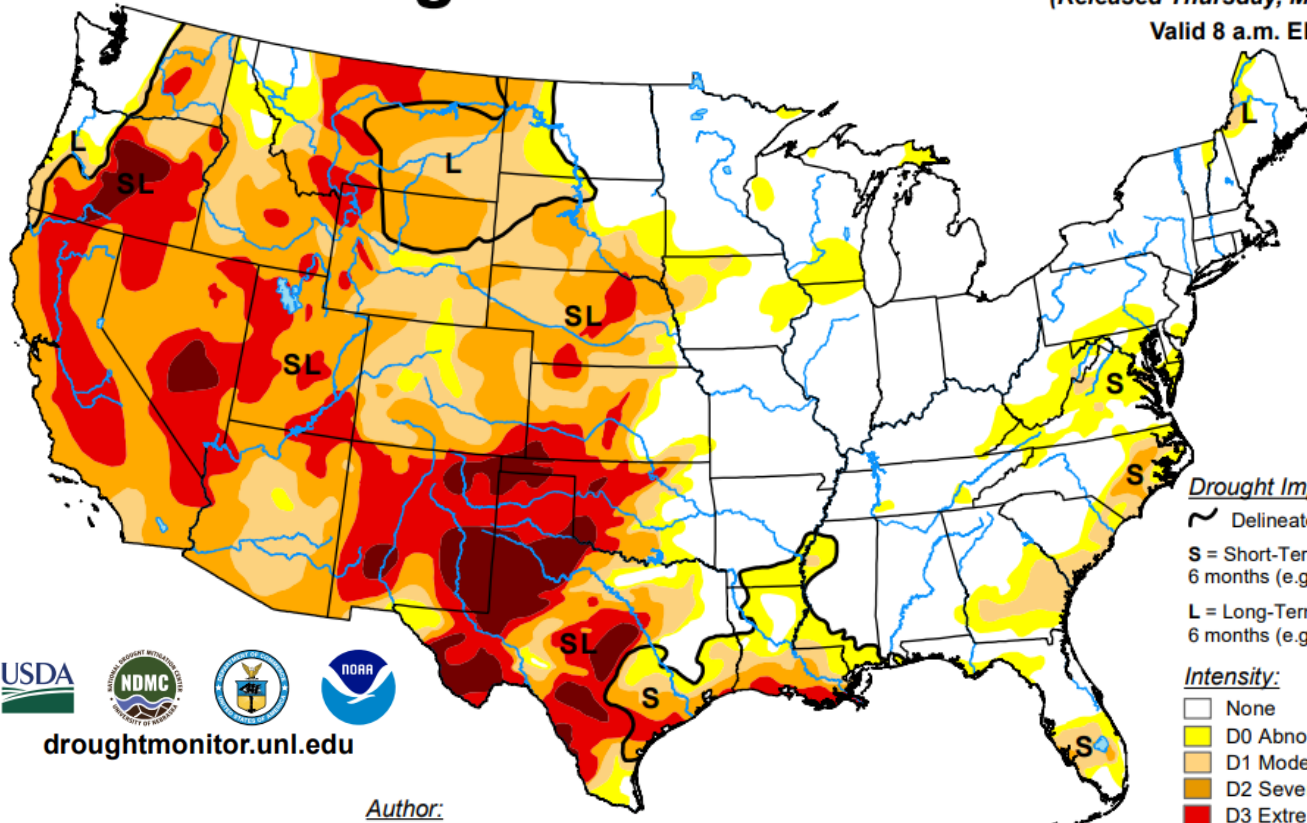
What is the problem?

U.S. Drought Monitor

May 3, 2022

(Released Thursday, May 5, 2022)

Valid 8 a.m. EDT



Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

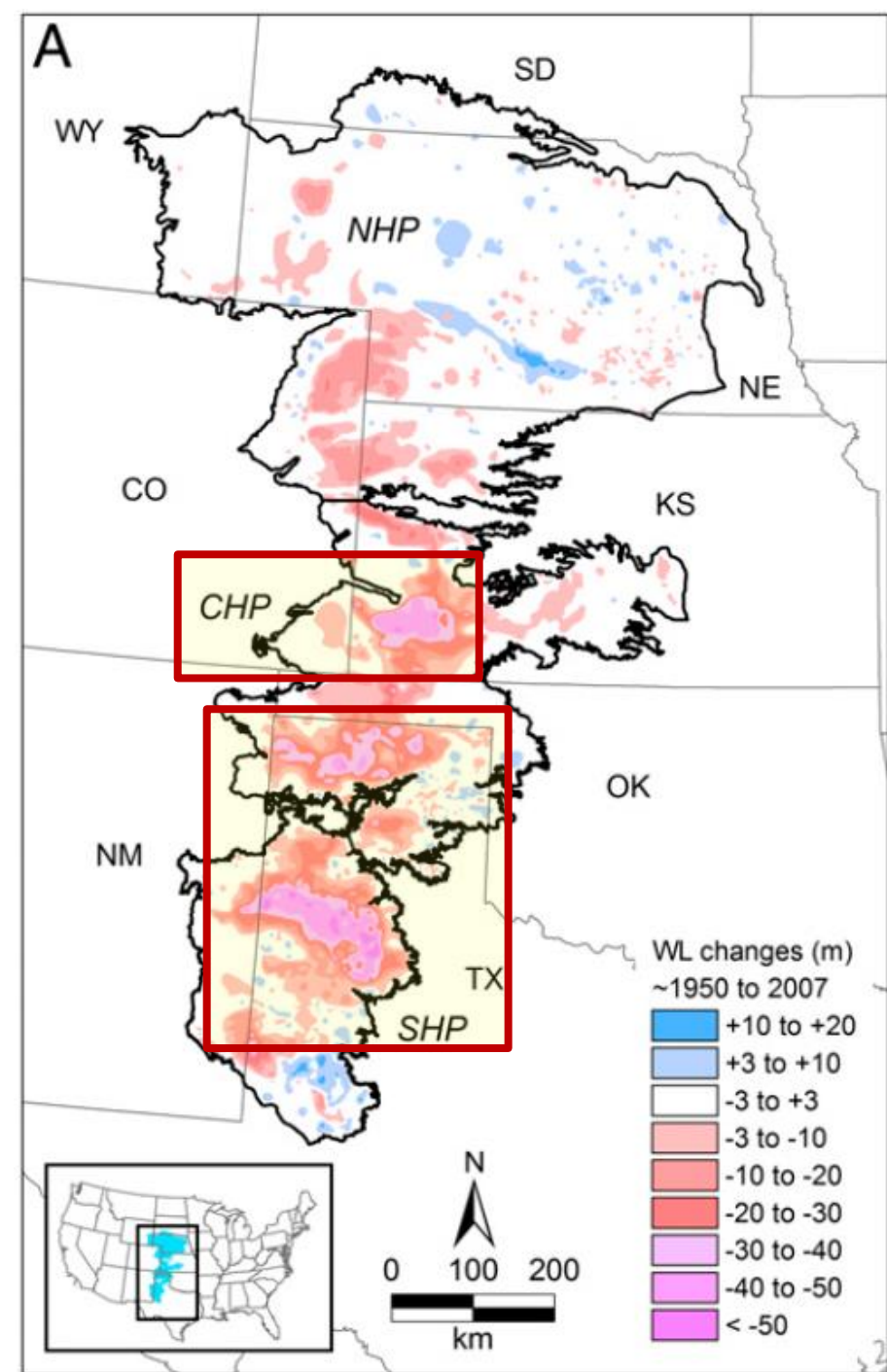
Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought



Author:
David Simeral
Western Regional Climate Center

Scanlon et al., 2012



What is the need (i.e., forage production objective)?



Sorghum as an Alternative Crop to Corn?



- **Drought tolerant**
- **Water use efficiency**
(in water-limited env.)
- **Lower input costs**
(~10X lower seed costs/acre;
lower fertilizer & irrigation costs)



• **↓ starch digestibility**

• **↓ fiber digestibility**



**Except BMR
sorghum hybrids!**

Strategies to increase sorghum starch digestibility

Plant maturity
Grain processing
Ensiling time

Berry Size?

Grain:stover ratio?

Starch composition?



Objective #1

↑ sorghum silage Berry Processing Score (BPS) and starch digestibility through using sorghum kernel processors (KP) and settings designed to maximize sorghum grain processing and ↑ ensiling time.

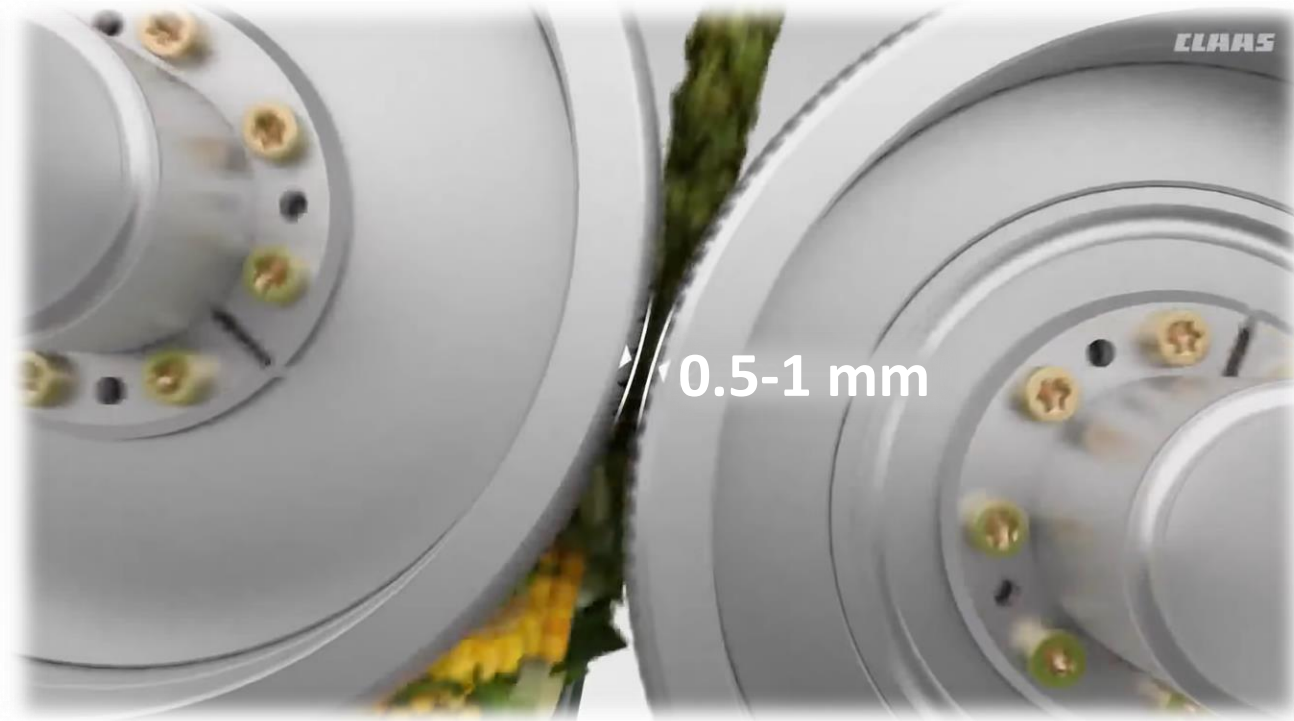
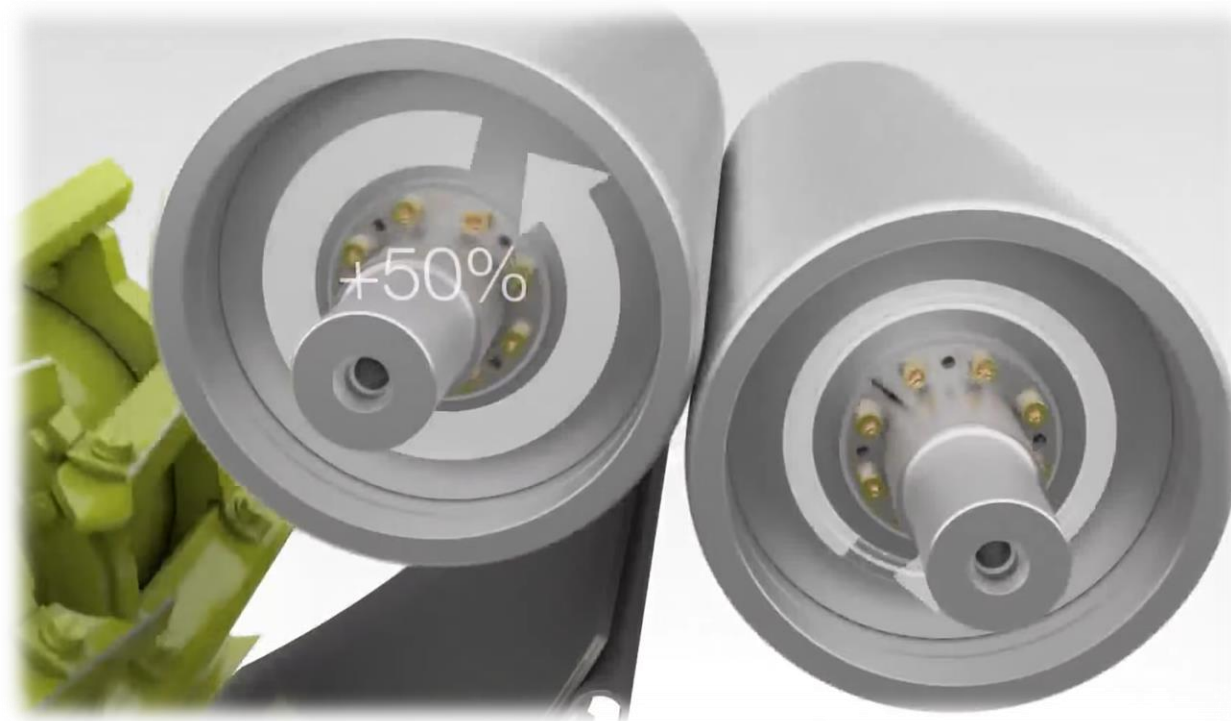
Experiment with sorghum KP technology

Milo KP from Scherer Inc.

Aggressive Settings:

- 0.5-1 mm roll gap
- 50% differential

4 Ensiling times:
0, 3, 6 and 9 months





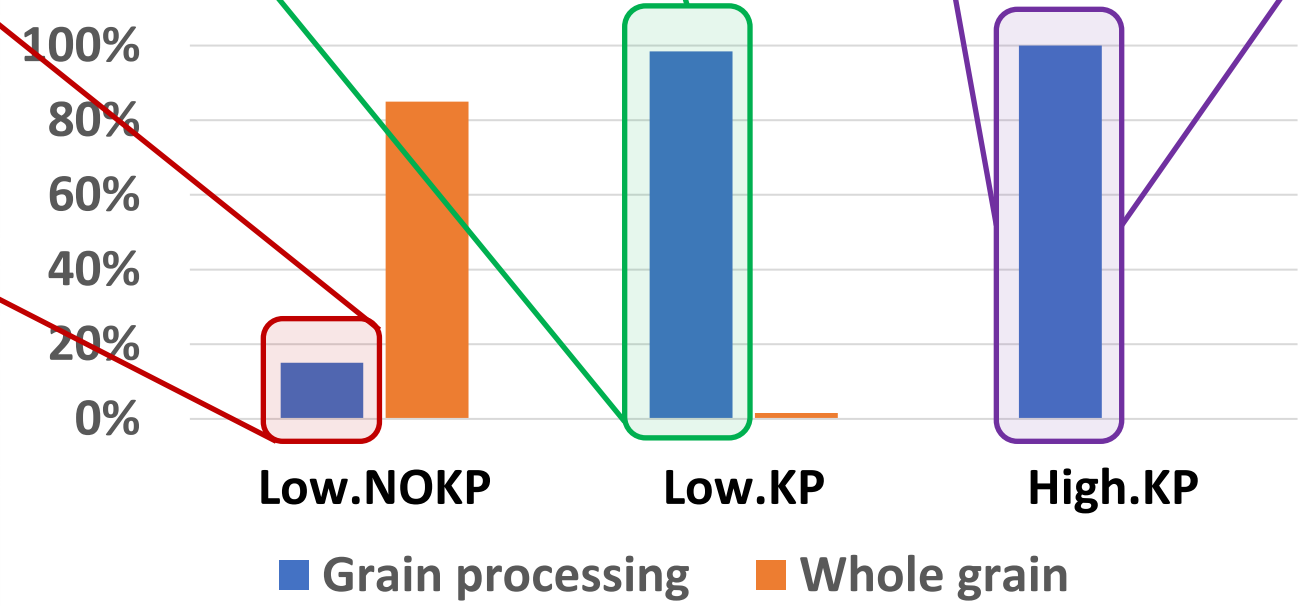
98.4% of berries processed 



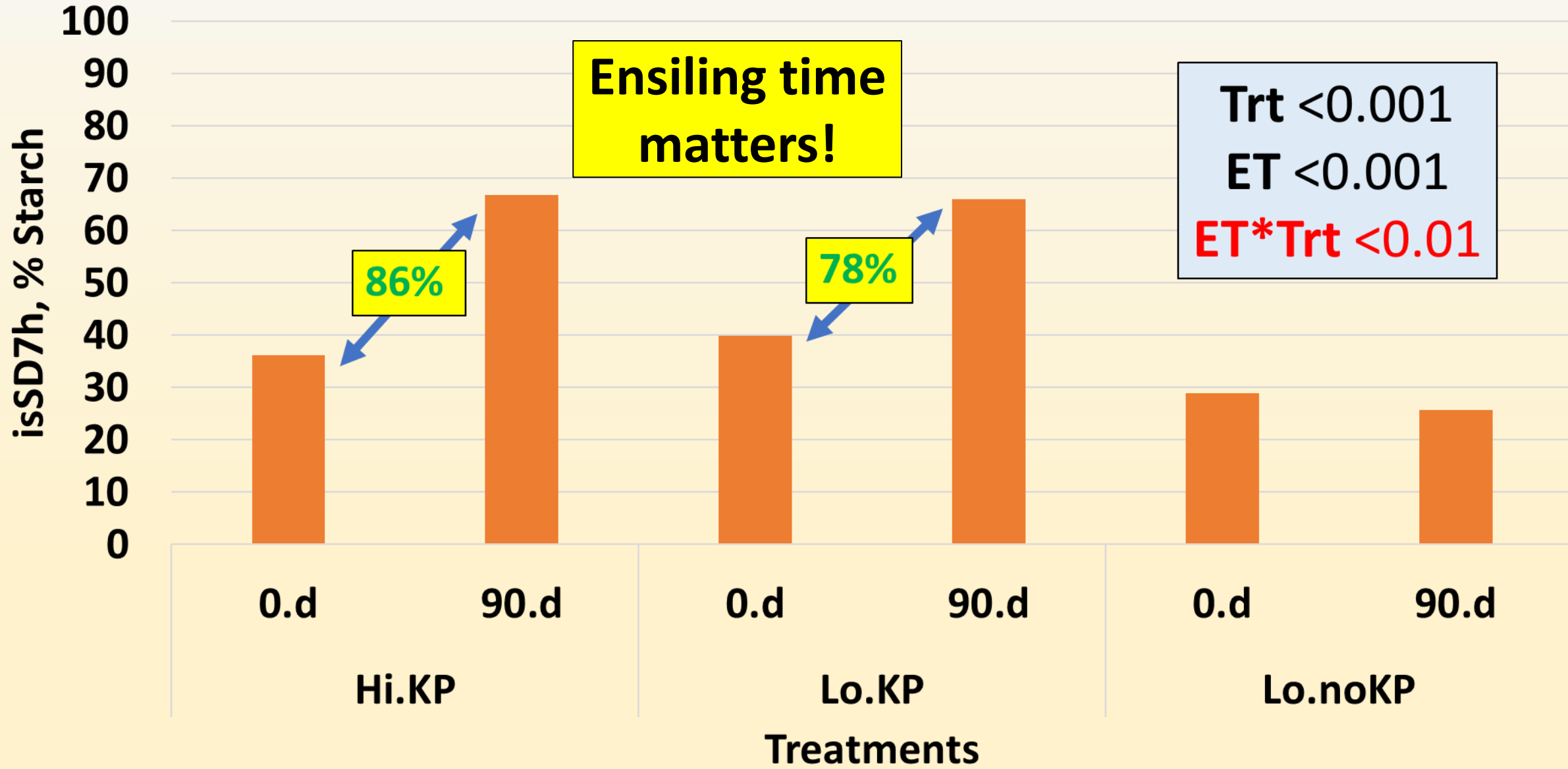
100% of berries processed



15% of berries processed 



Effect of KP and ET on rumen in-situ 7h starch digestibility (isSD7h)





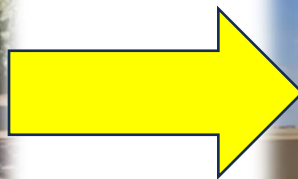
Objective #2

Assessing the effect of 0%, 25% and 50% replacement steam flaked corn (SFC) with high moisture sorghum (HMS) on starch digestibility

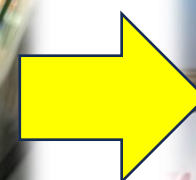
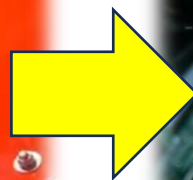
	Period		
Heifer	1	2	3
1	50%	25%	0%
2	25%	0%	50%
3	0%	50%	25%

	Period		
Heifer	1	2	3
4	25%	0%	50%
5	50%	25%	0%
6	0%	50%	25%

	Period		
Heifer	1	2	3
7	0%	50%	25%
8	25%	0%	50%
9	50%	25%	0%



High moisture sorghum experiment



Acknowledgements

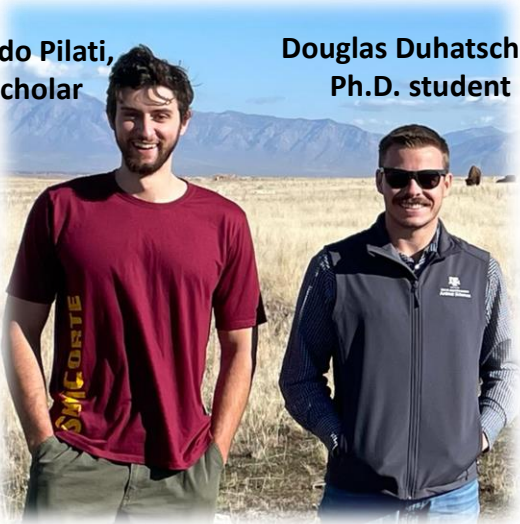
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Collaborating dairy farmers and personnel

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Questions?

THANK YOU!

